CASE OF EXTRAPERITONEAL URETERO-LITHOTOMY, FOLLOWING NEPHRO-LITHOTOMY AND NEPHRECTOMY.[1]

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THERE are so many industrious workers in all the special and general departments of surgery that the aspirant for new honors must find it extremely difficult to extend his researches into fields that have not already been explored. For a long time hidden in regions that were considered inaccessible, the ureter had escaped the keen eye of the aggressive surgeon; but during the last four years experimental work in the laboratory has appeared to warrant methods of repair for damaged tubes that have been taken advantage of by operators in this country and in Europe. Some points of a practical character have been demonstrated by the anatomical investigations of Cabot, of Boston, and the exhaustive article, by Christian Fenger,[2] of Chicago, leaves nothing to be said; it is a concise and masterly *résumé* of everything that has been written upon the subject.

Referring to the five reported cases of extraperitoneal ureterotomy, by Twynam, Cabot, Rolfe, Godlee, Kirkham, and the author of the paper, in four of these cases the calculus was reached through a lumbar incision; in three of these the stone was found two inches below the kidney; in Kirkham's case the situation was one-half inch above crossing of external iliac artery; in Twynam's case the combined operation was used; in my own case the calculus was found in what M. Le Dentu speaks of as the inaccessible region.

[1] Read before the New York Surgical Society, November 14, 1894.

[2] ANNALS OF SURGERY, Vol. XX, No. 3.

Case of Nephro-Lithotomy supplemented by Nephrectomy and Extraperitoneal Uretero-Lithotomy.—The patient, a man forty-nine years of age, entered the Presbyterian Hospital, in the city of New York, January, 1894. From the age of five years he had been the subject of attacks which consisted of excruciating pain referred to the region of the left kidney behind. The pain would begin slowly, but would gradually increase in severity until the acme was reached in about ten hours. Then of a sudden the pain would leave him, his bladder would instantly fill up, and he would pass sixteen to eighteen ounces of urine. The relief was almost instantaneous, for in a very few minutes he would feel perfectly well, and attend to any duty, or engage in any sort of sport. Attacks precisely similar to these in character occurred throughout the patient's life at varying intervals, in spite of various methods of treatment. The intervals between the attacks would at times be of several months, at times only of a few weeks, there being no regularity whatever in their occurrence. Between the attacks the patient was always entirely free from pain. He thinks he remembers to have had some blood in his urine once or twice, but is not certain.

At the age of forty-five he sought operative treatment. This was four years ago, and a lumbar nephrotomy was performed upon him in one of our city hospitals. A dilated kidney was cut into, and its contents evacuated, but no stone was found.

Five weeks after the operation the old pain returned, precisely similar in character to that previously suffered from. These attacks he has had about every two weeks since then, and they are only partially controlled by large doses of morphine.

The patient was loth to submit himself to any further operative procedures, until after six months of increased suffering, when he finally consented to an exploratory operation.

January 3, 1894. Nephro-lithotomy was done. The kidney was exposed by a vertical lumbar incision. It was surrounded on all sides by dense adhesions, posteriorly especially they were extremely firm; sweeping over the anterior surface the finger broke through the remaining thin shell of kidney tissue into a large pus cavity. In fact, the organ was converted into a large abscess, the pus was evacuated, and the finger came in contact with a calculus, which was removed without any difficulty; it appeared to have been formed by the coalescence of four distinct concretions; it measured three and three-quarters inches in its largest circumference, and weighed 115 grains;

some of the dilated sac was cut away, and the wound which was left open was packed with gauze.

The relief afforded by this operation was by no means complete. He still continued to suffer from some of his old pains. The wound refused to heal, degenerating into a fistula that discharged quite a considerable amount of urine, and he was advised and consented to an operation for the removal of the kidney.

Nephrectomy was accordingly done May 6. Anticipating that considerable difficulty would be encountered in operating through the cicatricial tissue following the previous operations, a liberal vertical and obliquely transverse incision was used, the confluence of these incisions enclosing the sinus that led down to the kidney. It required a very careful and tedious dissection to separate it from the colon and peritoneum, but the enucleation was finally complete. The artery and vein were tied together; the ureter was secured by a separate ligature. This, of course, might have been dispensed with entirely, and was only used to diminish the danger of wound infection. The cavity was filled with iodoform gauze, which was not removed until the fifth day. Recovery was uneventful; the ligatures which had been left long came away in about three weeks; he was entirely relieved of his backache, but a new set of symptoms presented, or, probably, it would be more correct to say that symptoms which had been in some degree masked by the more prominent ones associated with the kidney concentrated themselves in the area presided over by the distribution of the genito-crural nerve; he complained of more or less persistent pain about two inches to the left of the median line, and the same distance above Poupart's ligament, radiating from that point towards the inguinal canal, the testis, and the glans.

On my return from a vacation, early in September, I found that these pains were more severe and constant; and that there was a sensitive area above Poupart's ligament. Apprehending the presence of calculus, I advised him to submit to an examination under ether, and such operation as the conditions might indicate. Accordingly on September 5 he was again etherized. Examination of the interior of the bladder proved that viscus to be free from trouble; rectal exploration revealed a small hard mass in the situation of the left seminal vesicle; nothing could be felt through the abdominal walls.

An incision was made four inches in length along the outer border of the left rectus; it was possible through this to explore the ureter from its origin in the ileo-costal space to the base of the blad-

der. This was done with orderly precision, but for some time the examination failed to reveal anything; there was noticed some little bulging of the inner aspect of the bony wall close to the brim of the pelvis, but it was believed to be the brim itself, and only after closer examination was it determined to be a mass which was separable from and situate immediately below the brim; a more careful scrutiny made out its true character; it was fixed immovably in its position, dense in structure, about the size and shape of an almond shell, and felt as if composed of two separate masses, one a larger one that yielded slightly to the pressure of the finger, and a smaller mass of the hardness of stone.

An assistant was now requested to examine for the mass in the rectum, and it could no longer be felt. There could be no possible connection between the mass found on section and that discovered at the base of the bladder. There was quite an interval of space between the two, and what became of the former must remain open to conjecture.

The outer portion of the peritoneum was then stripped from the fossa, laying bare the iliac vessels, and exposing the dilated and thickened ureter. This was carefully opened by an incision one inch long, and the stone was easily removed from its bed. It proved to be an oval oxalate-of-lime calculus measuring in its longest diameter two inches, and in its shortest circumference one inch and a half, and weighing fifty-four grains.

A flexible catheter was now passed into the bladder a distance of less than four, and upward to the renal end of the ureter a distance of more than four inches. The edges of the peritoneum were then carefully united by suture. A few deep sutures were introduced at either end of the wound in the abdominal walls, and the cavity leading down to the wound in the ureter was lightly packed with iodoform gauze. The after-history was uneventful; there was but little elevation of temperature, the wound closed rapidly, and the patient was discharged from the hospital entirely well in the early part of October.

In this case the presence of ureteral calculus was not possible to be made out at first. The symptoms were masked by the presence of a calculus in the pelvis of the kidney, and even after the elimination of that factor symptoms continued, which were ascribed to the presence of the disorganized kidney itself. It was

only after the removal of this that the symptoms of a foreign body in the ureter stood out in unmistakable relief,—that is, pain in the inguinal region, in the glans, and in the testis, and some tenderness two inches from the median line, and about the same distance above Poupart's ligament. As far as the canal itself could be traced, nothing could be found; sounding the bladder was negative; examination of the rectum found some induration in the site of one vesicle, but the operation determined that to be independent of the real seat of trouble. Nothing could have thrown further light upon the case, or could have enabled us to act intelligently, but the abdominal section, and I feel sure that even had we known precisely where the stone lay, we could not have removed it without great difficulty by any other means, situate as it was immediately below the brim of the pelvis, and almost immovably fixed, the fingers of an assistant acting from below were required to push it up into sufficient prominence to facilitate the process of enucleation.

I think that diagnosticating the existence of a calculus, and its location in the ureter is in many cases an exceedingly difficult matter; of course, when there is present the characteristic colicky pain, with a sensitive spot in the loin, and possibly a tumor that can be made out by bimanual palpation, there can be no doubt, but where the calculus is in the more inaccessible portion of the ureter, between the brim of the pelvis and the bladder, the difficulties increase. Calculi engaged in or near the orifices of the ureters, where they terminate in the bladder, may often be made out by the sound, or by rectal or vaginal examination, and may be safely removed through suprapubic openings in the bladder, or through the vault of the vagina; it is that portion of the ureter outside of this region and yet below the pelvic brim that has been considered out of reach, and for these Cabot has devised a modification of Kraske's sacral resection, which he has tried on the cadaver, and has found amply sufficient for the exposure of that portion of the ureter that cannot be reached through the usual routes; in any case it is advisable to do the extraperitoneal operation, especially is this proper when the ureter communicates with a more or less diseased kidney. Under such conditions a

transperitoneal operation would probably have a fatal issue, but a combination of the two methods, section of the abdominal walls for diagnosis, and then stripping up the peritoneum sufficiently to expose the part to be operated upon, with careful suture of the peritoneum, and an open wound leading down to the ureteral incision, appears to me as the ideal method to reach such cases as the one I have related.